targets

Common Digital Architecture

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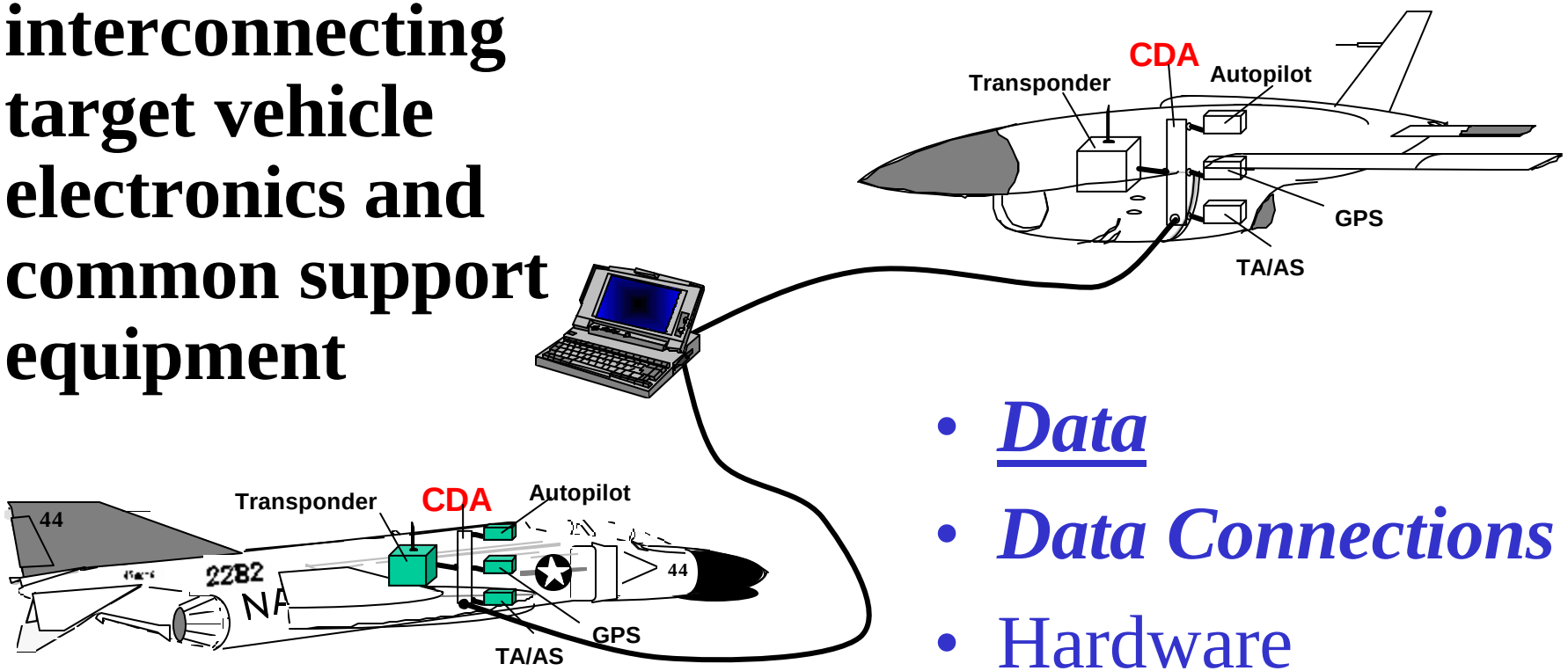
Catch the Wave

Standard for interconnecting target vehicle electronics and common support equipment



- ***Data***
- ***Data Connections***
- Hardware

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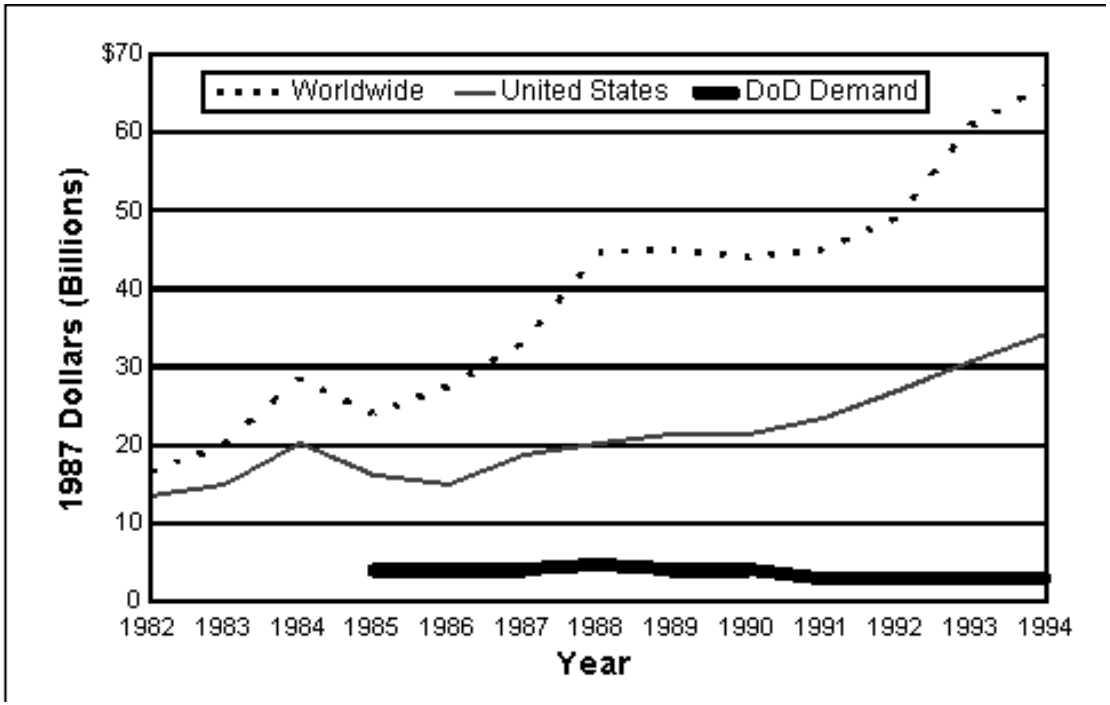
DoD no longer drives the market

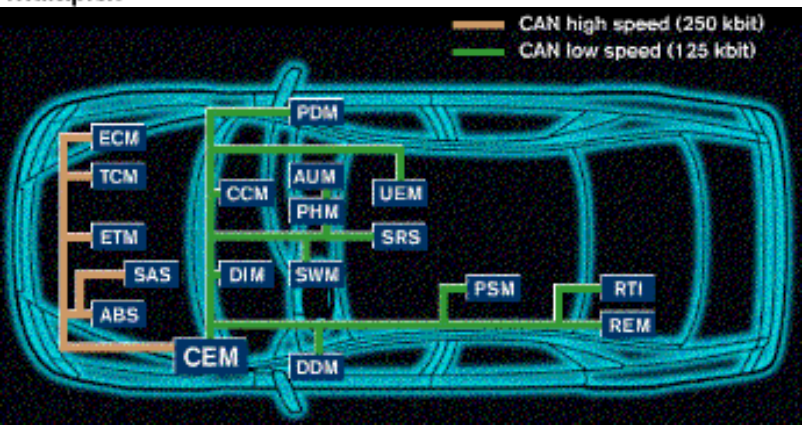


Due to the changes within the defense market segment, as well as the required deployment within our business group, Intel has decided to End Life of their Military and Special Environment products.

what's industry doing?

Multiplex

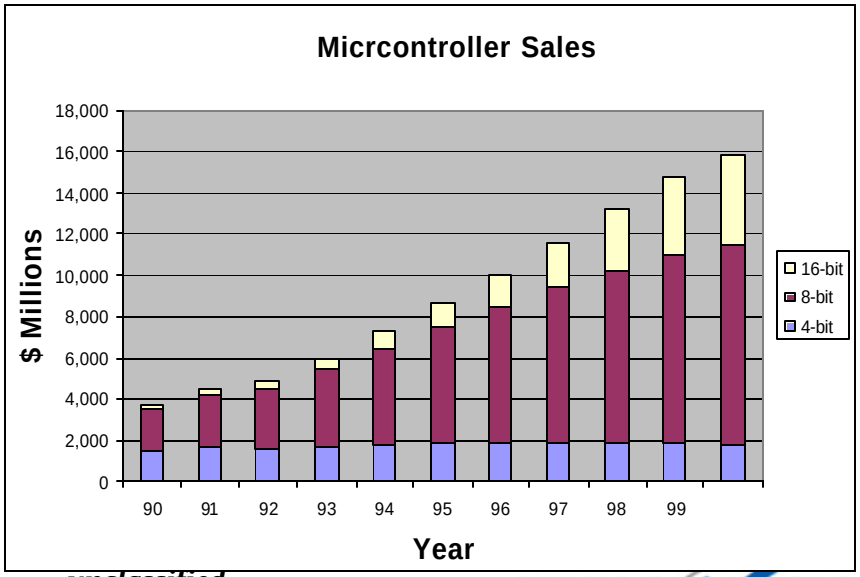
Body Electronics & Security



- Microcontrollers are going into everything from washing machines to automobiles.
- The volume is driving cost down and capabilities up.
- Inexpensive 'smart' devices are a reality

MUX uses one or more serial networks in order to achieve:

•Reduction of the number of wires within a vehicle
•Increased functionality
•Increased flexibility
•Virtual integration of system functions
•Improved systems diagnostics



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early years

- **FY 97**
- Workshops
- CDA 101 standard
- Insertion Plan

- **FY 98**
- Seaborne Target Demonstration
- BQM-74 Implementation Report
- MQM-107 Implementation Report
- Gateway Design and AF Report

specification building blocks

Road vehicles -- Interchange of digital information -- Controller Area Network (CAN) for high-speed communication

International Organization for Standardization

NMEA 2000

STANDARD FOR SERIAL-DATA NETWORKING OF MARINE ELECTRONIC DEVICES

CAN KINGDOM

A set of protocol primitives, and a tool for a system designer to create an optimized higher layer protocol.

Target Unique Data Requirements

CDA 101
The Specification

Data

- CDA 101//35 Rotary Wing Target Systems
- CDA 101/34 Full-Scale Aerial Target Systems
- CDA 101/33 Sub-Scale Aerial Target Systems
- CDA 101/32 Ground Vehicle Target Systems
- CDA 101/31 Seaborne Target Systems

CDA 101/01
Top Level Specification

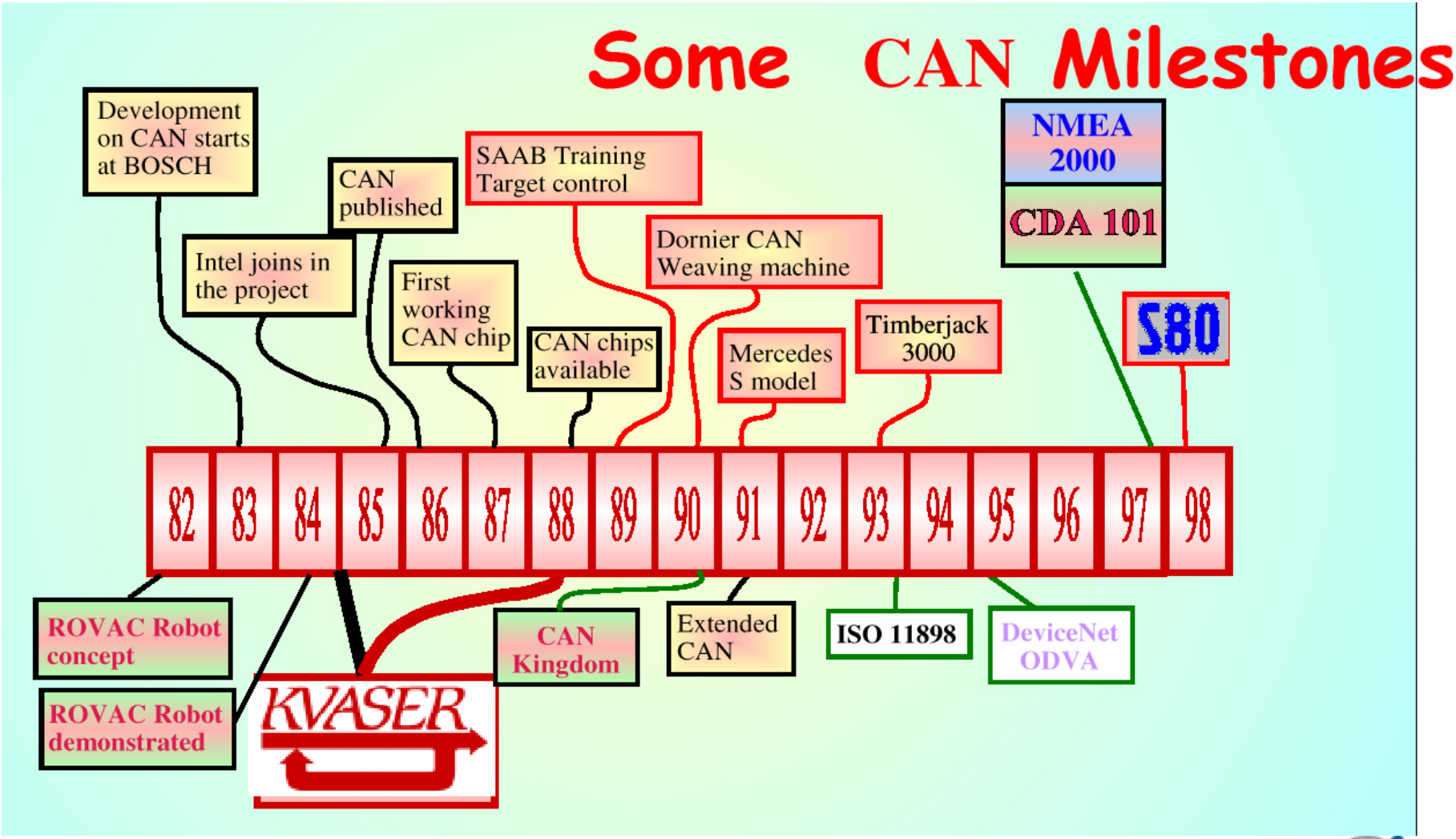
- CDA 101/42 Target System Augmentation
- CDA 101/41 Common Controllers, Actuators, and Sensors

- CDA 101/12 Parameter Definitions
- CDA 101/11 System Messages

Hardware

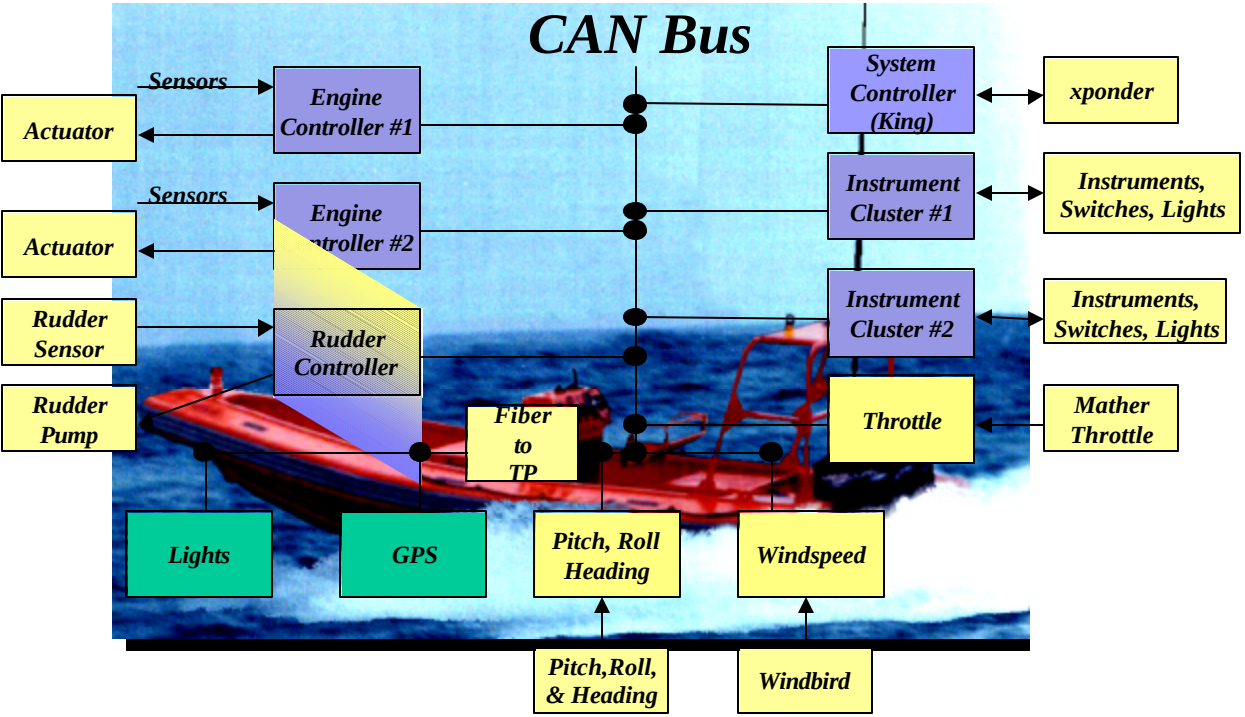
- CDA 101/21 Controller Area Network
- CDA 101/22 MIL-STD-1553 Bridge
- CDA 101/23 UDP/IP Bridge
- CDA 101/24 RS-232/422 Bridge
- CDA 101/25 Radio Frequency Transponder Bridge
- CDA 101/26 Routers

controller area network



SI2000

Seaborne Target 2000



CDA 101 Hardware/Software Reference Design

- 25% reduction in electronics cost
- Marked increase in flexibility
- Simplified maintenance & logistics
- Reduction in development time

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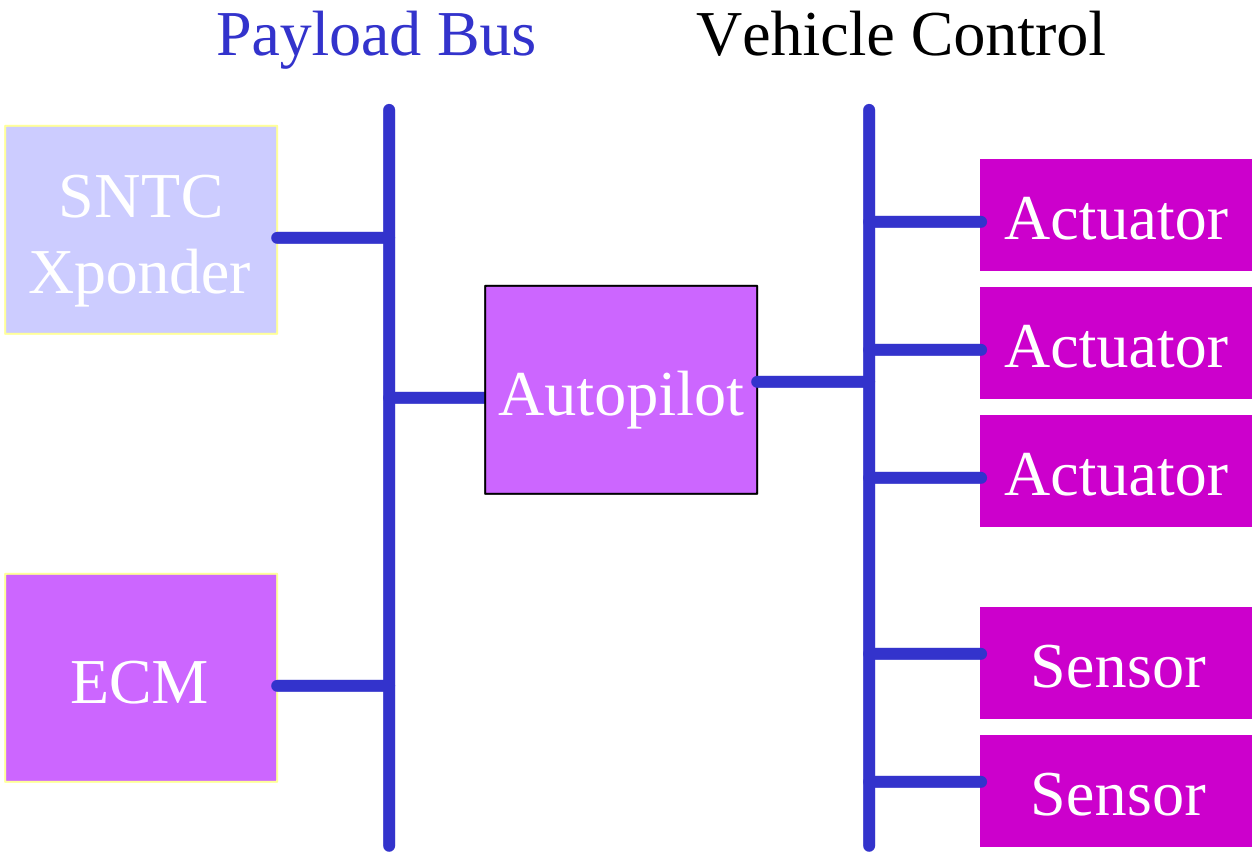
FY99/01 program overview

- *Training*
- BQM-74 Implementation
- MQM-107 Implementation
- ECM Implementation
- Ground Target System

- QF-4 Low Cost GPS Evaluation
- Compliance/Evaluation Procedure

notional target diagram



MQM-107

Payload Bus

Vehicle Control Bus

Xponder

ECM

Autopilot

Interface

Interface

Interface

Actuators

Sensors

unclassified

integration into MQM-107

- FY99
  - Modified SPVI
  - Ground HIL
- FY00
  - Modify ground station
  - Flight nodes
- FY01
  - Flight Test

BQM-74

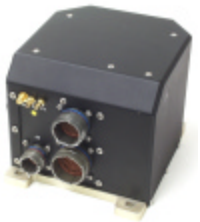
Payload Bus

Vehicle Control

SNTC Xponder

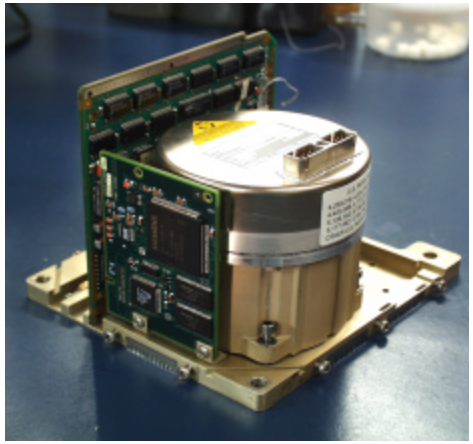
ECM

Autopilot



Actuators

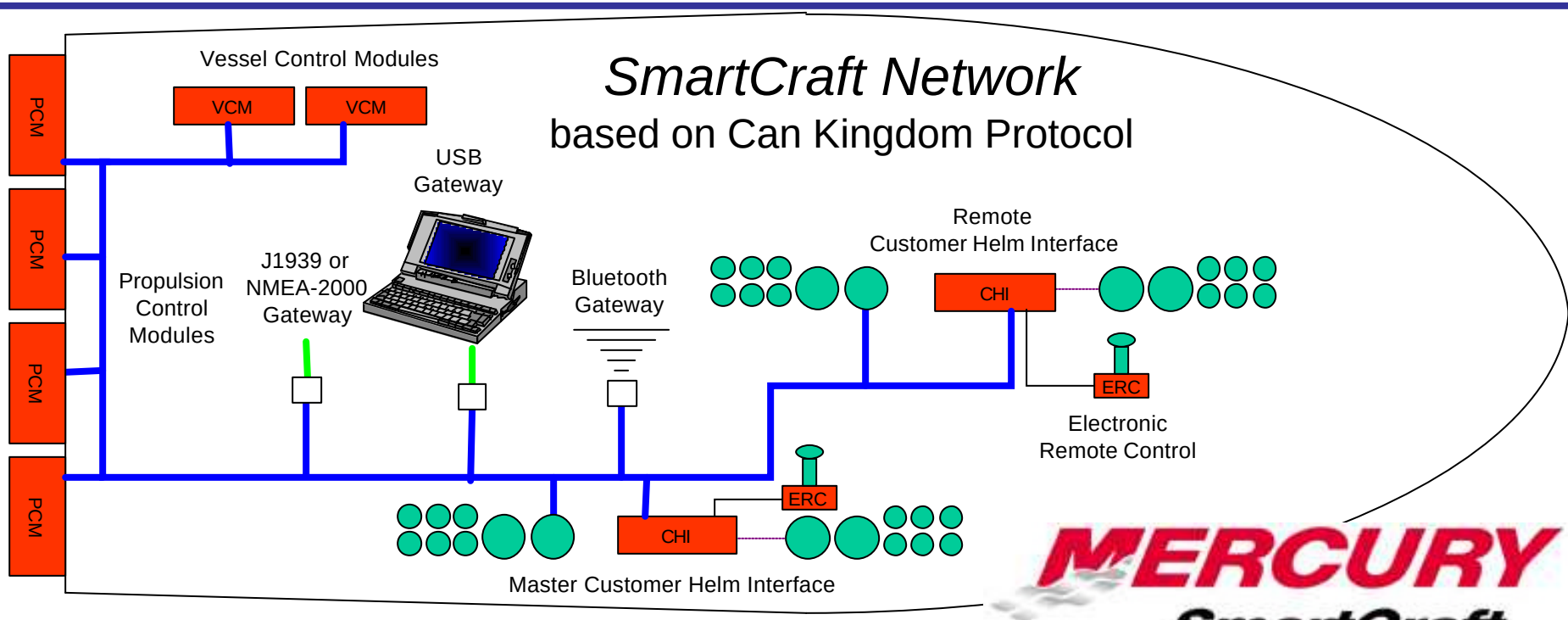
Sensors



integration into BQM-74

- FY99
  - Modified IAU
  - Modified ULQ-21
  - Ground Demonstration
- FY00
  - Modify SNTC transponder and ground station
- FY01
  - Ground Integration Demonstration

Mercury Marine SmartCraft

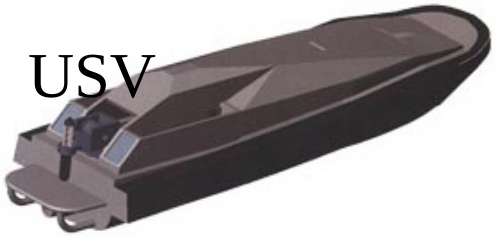


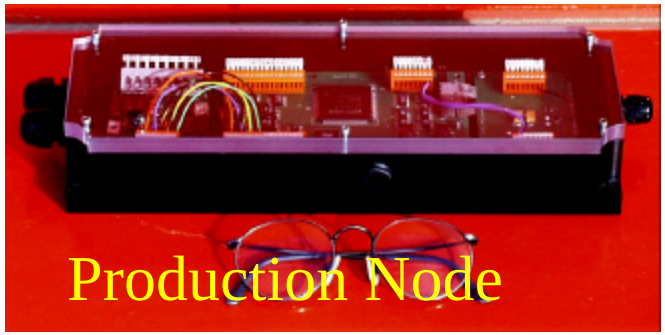
- Complete drive by wire multiplexed vessel
- Full redundancy (dual sensors, dual CAN, dual micro strategy)
- Safety critical systems dictate that control of bus must be maintained
- Significant strategy development to yield fail-safe systems design
- Open architecture must be achieved through managed gateways

seaborne targets

- HSMST
- QST-35
- QST-35 PI
- SDST
- Self Defense Test Ship
- Spartan USV Demonstration
- Other seaborne unmanned vehicles

USV

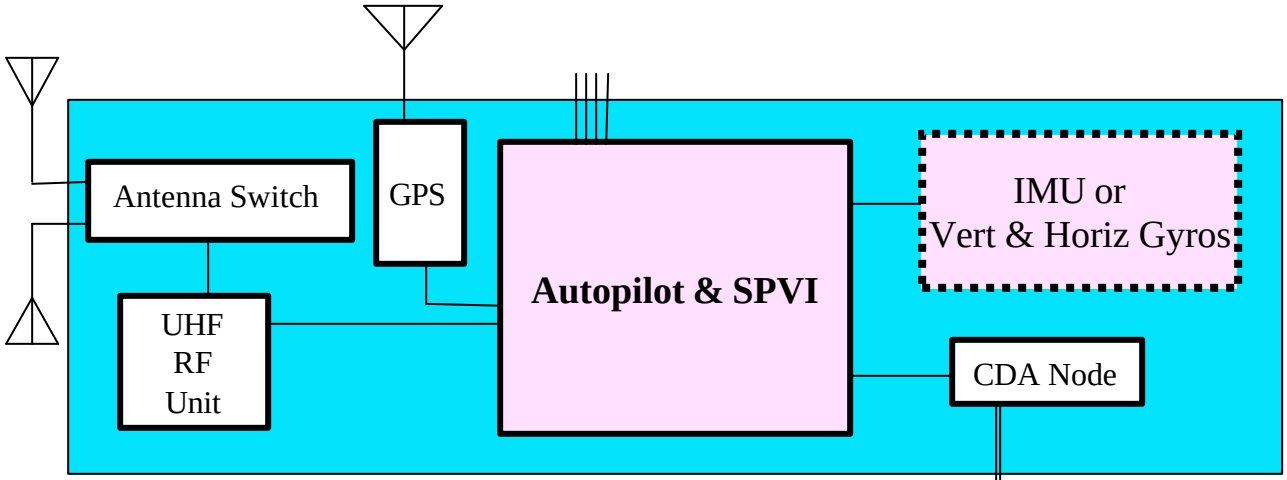




VTUAV

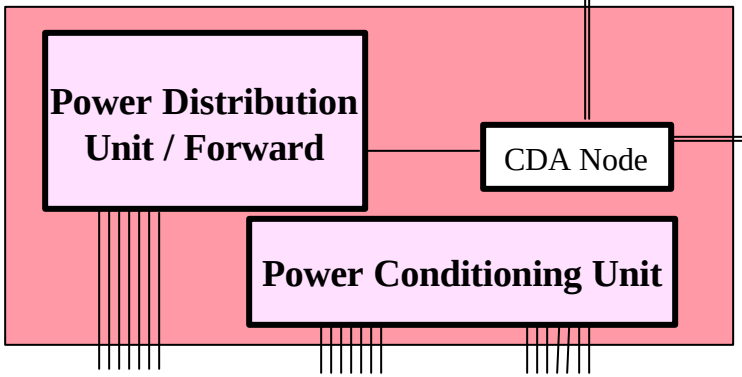
- Northrop-Grumman is using CDA technology in the VTUAV

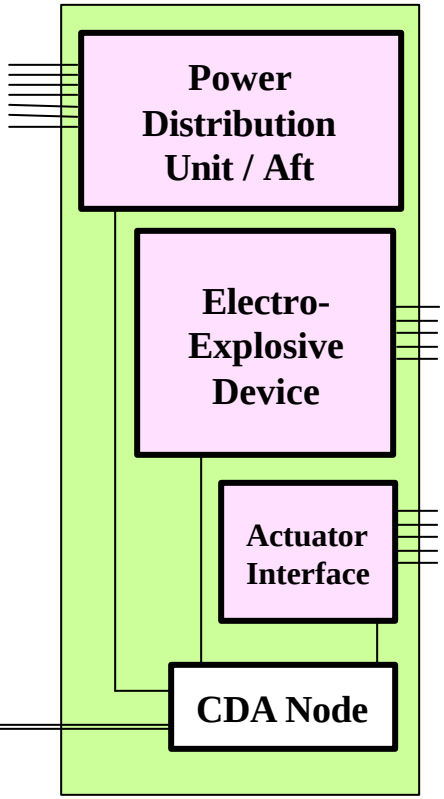
MQM-107 CAP



Common Avionics Package

Forward Node





Aft Node

: Current Development **: New Development**

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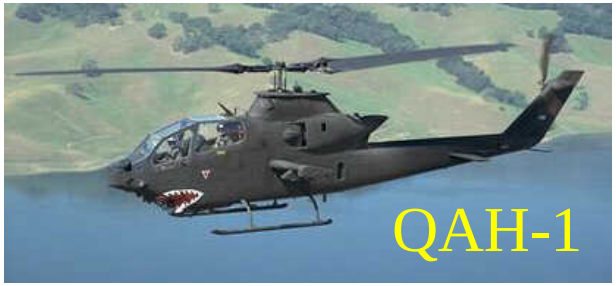
US army targets



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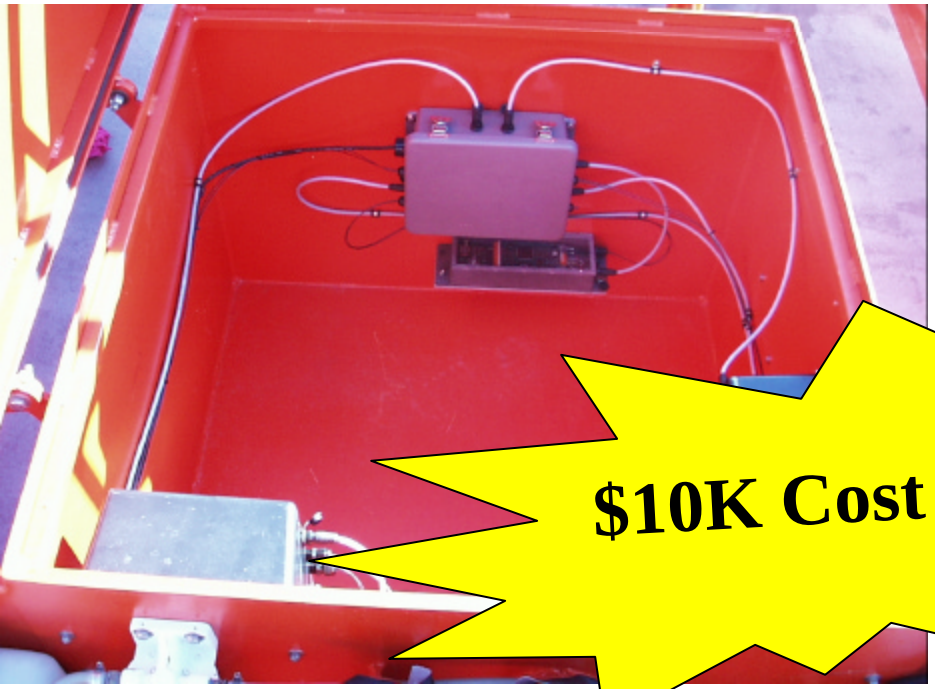
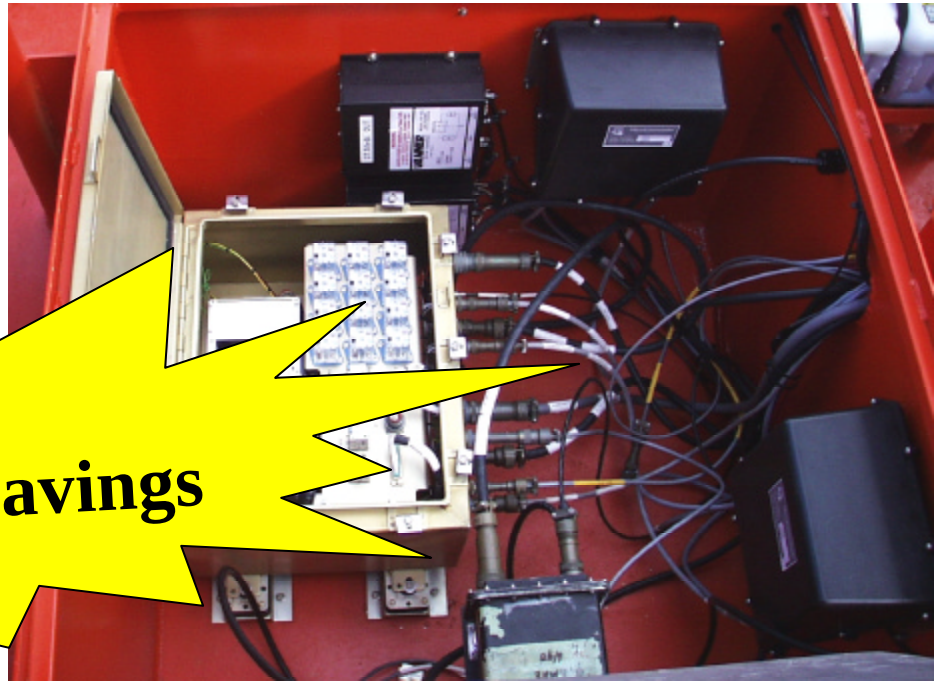
any questions?





$10K Cost Savings

This is your target with CDA.

This is your target without.